

PROCEEDINGS OF THE  
ENTOMOLOGICAL SOCIETY OF WASHINGTON

VOL. 51

DECEMBER, 1949

No. 6

THE GENUS *STENODYNERUS* IN SOUTHERN ARIZONA

(HYMENOPTERA, VESPIDAE)

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The species of *Stenodynerus* Saussure are medium-sized to small wasps of the odyneroide complex. The genus is the largest of the family Vespidae in North America with nearly 100 known species and races. Only about two-thirds of these have been described, however. There are two natural subgenera based on the presence or absence of a mite chamber at the juncture of the first two abdominal tergites. Of the 28 species known from southern Arizona\* 20 belong to the typical subgenus and eight to the mite-bearing *Parancistrocerus* Bequaert. Most of these have the ivory markings common to the majority of species from western Texas, New Mexico, northern Sonora and southeastern California. Four species are known only from the mountains of southern Arizona and two others occur also in the adjacent mountains of New Mexico. The remaining 22 range into the other areas mentioned above. Further collecting will undoubtedly indicate a wider distribution of many of the species in northern Mexico.

Large collections of several thousand specimens or more have been examined from the following institutions: U. S. Nation Museum (through E. A. Chapin and K. V. Krombein), California Academy of Sciences (through E. S. Ross), Museum of Comparative Zoology (through J. Bequaert), Cornell University (through J. C. Bradley and H. Dietrich), Oregon Agricultural College (through H. A. Scullen), University of Kansas Snow Museum (through R. H. Beamer), University of Michigan (through T. H. Hubbell), American Museum of Natural History (through M. Cazier and C. D. Michener), and University of California Citrus Experiment Station (through P. H. Timberlake). Numerous private individuals and custodians of smaller collections have cooperated also. Types are deposited in the California Academy of Sciences unless otherwise indicated and paratypes have been distributed to the above-mentioned collections as far as possible.

The drawings were made with a camera lucida and those of the male genitalia are from dissected and flattened mounts.

\*Arbitrarily restricted to the three southernmost counties, Pima, Santa Cruz and Cochise.

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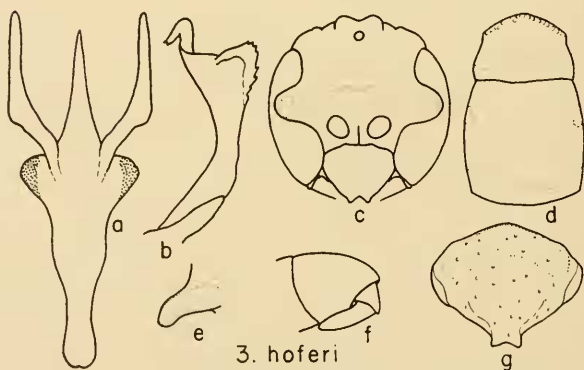
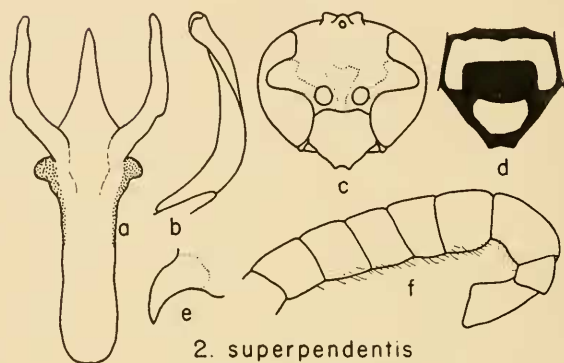
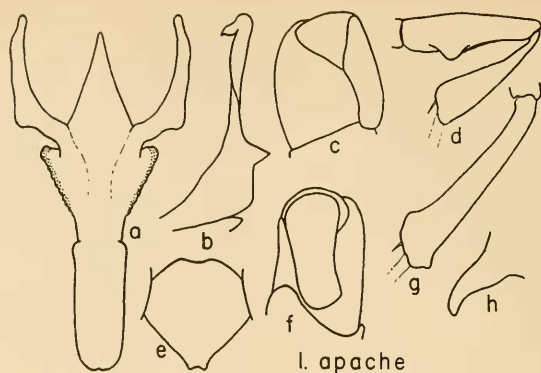


PLATE 21. STENODYNERUS.

Fig. 1. *S. apache*; a, aedeagus; b, basal extension of volsella; c, side view of antennal apex in male; d, femur and tibia of male mid leg; e, male clypeus; f, ventral view of antennal apex in male; g, hind tibia of male in lateral view; h, parategula. Fig. 2. *S. superpendentis*; a, aedeagus; b, basal extension of volsella; c, male head; d, female clypeus; e, parategula; f, side view of last 8 male antennal segments. Fig. 3. *S. hoferi*; a, aedeagus; b, basal extension of volsella; c, male head; d, abdominal tergites I and II of female seen from above; e, parategula; f, side view of antennal apex in male; g, female clypeus.

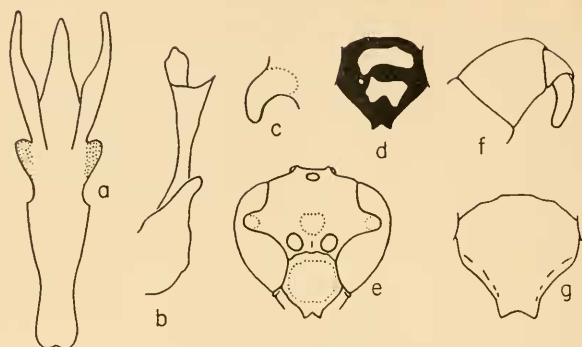
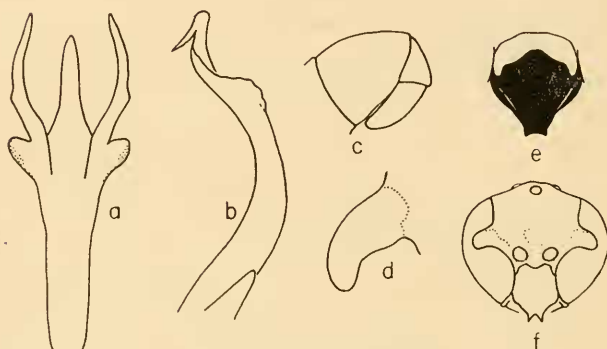
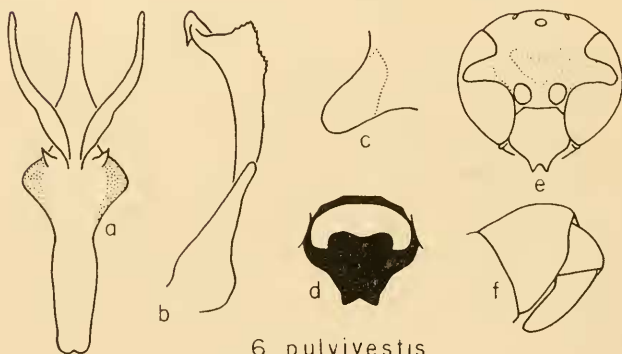
The importance of dissecting the genitalia has not been previously emphasized. In ordinary slide mounts the structures toward the middle of the aedeagus are curved under and obscure. Also the excellent characters basad of the volsella are tilted so as to appear different in any two mounts. Separating and spreading the aedeagus as well as dividing and flattening the two side pieces gives views which can be duplicated.

# KEY TO THE SPECIES OF STENODYNERUS OF SOUTHERN ARIZONA

1. Tergite I covering an acarinarium at base of tergite II, the latter smooth at extreme base except sometimes laterally\* ..... 2  
Tergite I not covering an acarinarium; tergite II with a row of pits across the extreme base (covered by tergite I unless abdomen is bent at first joint) ..... 9
2. Interocellar tubercles undeveloped; body relatively slender, swelling abruptly toward base of abdominal segment II as seen in lateral view; inner, posterior edge of parategula incurved; tergite II unspotted ..... 3  
Interocellar tubercles smooth and rising well above lateral ocelli ..... 4
3. Sternite II with a basomedian longitudinal crease; tergite II greatly lengthened, depressed and aciculate subapically, obliquely and thinly reflexed apically; sternite III convex at apex and covered with large pits; hind margin of pronotum dark ..... *rectangulis* (Viereck)  
Sternite II not creased at base; tergite II normal, slightly thickened apically; sternite III slightly concave at apex and covered with moderate punctures; hind margin of pronotum yellowed, at least posteriorly .....  
..... *chiricahuae*, new species, p. 254
4. Inner, posterior edge of parategula outcurved or bent outward (fig. 8,d); interocellar tubercles in male strongly bulging, separated by a sharp crease ..... 5  
Inner, posterior edge of parategula at least slightly incurved, not bent outward (figs. 1, h; 3, e) ..... 6
5. Tergite I with a distinct ledge-like carina across summit, apical thickening of tergite II equal to about one or two ocellus diameters; no free spot on tergite II or sternite II; male vertex well punctured; interocellar tubercles not bridged behind middle ocellus ..... *polingi*, new species, p. 257

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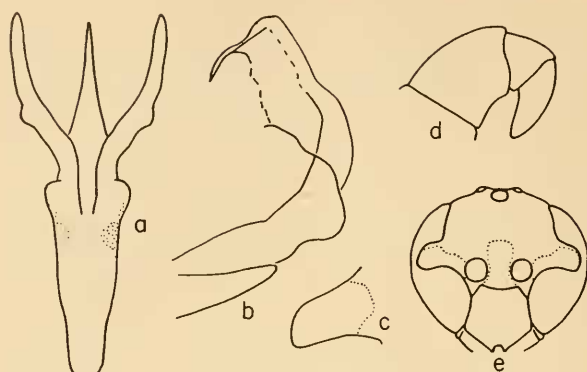
\*The presence of an acarinarium is usually indicated by a lengthening of tergite I; however, it is sometimes necessary to relax a specimen and bend its abdomen at the first joint to see the mite chamber or the alternative row of pits. The mite chamber usually contains mites, but not always.

4. *lixovestis*5. *williamsi*6. *pulvivestis*

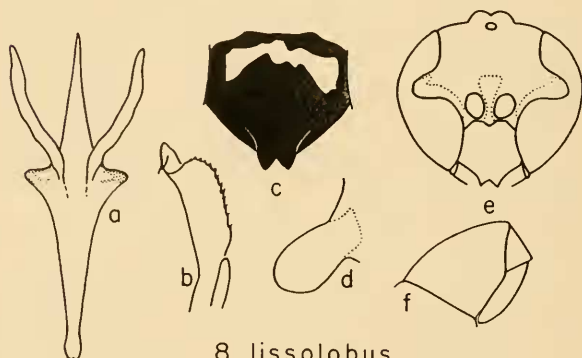
## PLATE 22. STENODYNERUS.

Fig. 4. *S. lixovestis*; a, aedeagus; b, basal extension of volsella; c, parategula; d, clypeal markings of male variant; e, male head; f, side view of antennal apex in male; g, female clypeus. Fig. 5. *S. williamsi*; a, aedeagus; b, basal extension of volsella; c, side view of antennal apex in male; d, parategula; e, female clypeus; f, male head. Fig. 6. *S. pulvivestis*; a, aedeagus; b, basal extension of volsella; c, parategula; d, female clypeus; e, male head; f, side view of antennal apex in male.

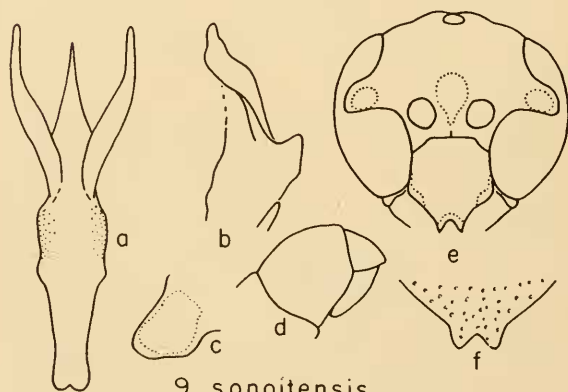
- Tergite I without a carina across summit, apical thickening of II usually equal to three to five ocellus diameters; usually with free spots on tergite II and sternite II; male vertex shiny and sparsely punctured; interocellar tubercles connected by a low bridge behind middle ocellus ..... *bicornis cushmani*, new subspecies, p. 253.
6. Tergite II with subapical depression and apical thickening slight, usually without free spots; tergite III mostly or all dark; markings ivory, legs brown and ivory ... *lacunus* (Fox)  
Tergite II distinctly depressed subapically and reflexed apically ..... 7
7. Tergites II and III thickened equally (about two ocellus diameters) at apex; sternite III with large pits and strongly convex apical margin; tergite III pitted toward center and with a median apical spot; tergite II without free spot; femora mostly red; interocellar tubercles connected by a low bridge above middle ocellus ..... *minimoferus*, new species, p. 256  
Tergite III not thickened and with moderate puncturation; sternite III with concave apical margin; femora mostly brown or black; interocellar tubercles not bridged in front ..... 8
8. Markings yellow; tergite II with an oblique reflex of about four to five ocellus diameters, apical margin projecting so that tergite is much longer at middle than at sides ..... *coronado*, new species, p. 255  
Markings ivory or ivory yellow; tergite II with a right angle reflex of about three ocellus diameters, apical margin slightly concave as seen from above; male clypeus, vertex and notum sparsely punctured ..... *toltecus* (Saunders)
9. Pleuron with plentiful decumbent pubescence which is silvery in some lights; tergite III apically banded; male mid femur toothed (fig. 1,d) ..... 10  
Pleuron with decumbent pubescence sparse or not silvery, or if so, tergite III without a complete apical band; male mid femur not toothed ..... 15
10. Tergite II without free spots, or if with free spots, hind margin of pronotum yellowish ..... 11  
Tergite II with free spots; hind margin of pronotum not yellowish. .... 12
11. Hind margin of pronotum yellowish; male hind tibia swollen apically but not ridged ..... *ochrogonius* R. Bohart  
Hind margin of pronotum not yellowish; male hind tibia swollen apically and external surface with a distinct ridge near middle ..... *foxensis* R. Bohart
12. Apical margin of tergite III hardly thicker than that of IV.... 13  
Apical margin of tergite III much thicker apically than that of IV ..... 14



7. *patagoniensis*



8. *lissolobus*



9. *sonoitensis*

PLATE 23. STENODYNERUS

Fig. 7. *S. patagoniensis*; a, aedeagus; b, basal extension of volsella; c, parategula; d, side view of antennal apex in male; e, male head. Fig. 8. *S. lissolobus*; a, aedeagus; b, basal extension of volsella; c, female clypeus; d, parategula; e, male head; f, side view of antennal apex in male. Fig. 9. *S. sonoitensis*; a, aedeagus; b, basal extension of volsella; c, parategula; d, side view of antennal apex in male; e, male head; f, apex of female clypeus.

13. Tergite II with apical margin about as thick as an ocellus diameter, female clypeus with apex about as wide as length of fourth antennal segment; apical swelling of male hind tibia with a broad pubescent horizontal surface; legs mostly reddish ..... *taos* (Cresson)  
 Tergite II with apical margin not as thick as an ocellus diameter; female clypeus with apex about as wide as length of third antennal segment; apical swelling of male hind tibia slanting toward inner leg surface; legs red and yellow or red, yellow and black ..... *microstictus* (Viereck)
14. Tergite II with apical margin two or more times as thick as tergite III; flagellum entirely dark in both sexes; male hind tibia not appreciably swollen at apex .. *papagorum* (Viereck)  
 Tergite II with apical margin about as thick as that of III; flagellum fulvous beneath, male hind tibia swollen at apex ..... *apache*, new species, p. 244
15. Inner, posterior margin of parategula bent or curved outward (figs. 8,d; 9,c) ..... 16  
 Inner, posterior margin of parategula straight or incurved (figs. 2,e; 6,c) ..... 19
16. Tergite II without free spots; tergite III all dark ..... 17  
 Tergite II with free spots; tergite III with a partial or complete apical band ..... 18
17. Interocellar tubercles low, narrow and not connected by a bridge behind middle ocellus; tergite II with an irregular ledge-like carine across its summit ..... *sonoitensis*, new species, p. 251  
 Interocellar tubercles shiny, bulging, connected by a low bridge behind middle ocellus; tergite II without a carina .....  
 ..... *lissolobus*, new species, p. 246
18. Scutellum forming a saddle-shaped ridge; clypeus narrowly rounded truncate at apex in both sexes, finely punctured in male; last antennal segment of male pale reddish; body mostly brick red ..... *percampamulatus* (Viereck)  
 Scutellum rounded; clypeus incised at apex, broad and with coarse punctures in male; last antennal segment of male dark brown; body black and ivory yellow .....  
 ..... *painteri*, new species, p. 248
19. Markings a deep, bright sulfur yellow; tergite II with large spots which sometimes join to form a median band; tergite III with a complete band; sternite II with large spots; pubescence fulvous, not silvery ..... *cochisensis* (Viereck) ..... 20  
 Markings ivory yellow or whitish
20. Median projection of sternite I strongly protruding and rounded truncate; ocelli large, no interocellar tubercles; male clypeus with part below juncture with compound eye only half as long as part above (fig. 7e); tergite I finely punctured at summit; tergite III and sternites III to VII dark .....  
 ..... *patagoniensis*, new species, p. 249
- Median projection of sternite I not prominent ..... 21



21. Punctures at summit of tergite I not larger than those in subapical area of the tergite, no carina present ..... 22  
 Punctures at summit of tergite I larger than those of subapical area, or a carina present across summit ..... 24
22. Tergite II drawn out hood-like; vertex with two pairs of shiny humps behind ocelli; sternite II without a basomedian longitudinal crease ..... *vanduzeei* R. Bohart  
 Tergite II not drawn out; vertex without humps; sternite II with a basal crease ..... 23
23. Each of ocelli with an overhanging tubercle; last antennal segment of male greatly enlarged and subtriangular (fig. 2,f); mid femur red, white and black; tegula mostly red; body with fine silvery pubescence *superpendentis*, new species, p. 252  
 No interocellar tubercles; last antennal segment of male normal (fig. 6,f), narrow at apex; mid femur brown and ivory; tegula mostly ivory; body with an iridescent pulverulence ..... *pulvirestis*, new species, p. 249
24. Summit of tergite I with a fairly definite carina ..... 25  
 Summit of tergite I without a carina ..... 26
25. Thorax about twice as long as broad; as seen from above, tergite I angled and tergite II longer than broad; third and following abdominal segments dark; vertex with a hump near compound eye (fig. 3,e) ..... *hoferi*, new species, p. 246  
 Thorax less than twice as long as broad; as seen from above, tergite I semicircular and tergite II broader than long; tergites IV to VI in male, IV and V in female, sternite III in male with pale marks; vertex without humps ..... *williamsi*, new species, p. 253
26. Interocellar tubercles rather narrow and punctured, but strong, especially in male; clypeus of male edged or mottled with black (figs. 4,d; 4,e), that of female and mandible base in both sexes all black ..... *livorestis*, new species, p. 247  
 Interocellar tubercles undeveloped or weak ..... 27
27. Last antennal segment of male small and pale reddish; clypeus of male moderately punctured and somewhat strigose; vertex pit of female small and obscure ..... *rudus*, new species, p. 250  
 Last antennal segment of male rather large and dark, clypeus of male sparsely punctured and polished; vertex pit of female forming a valley as broad as ocellar triangle ..... *valliceps* R. Bohart

**Stenodynerus (Stenodynerus) apache**, new species

(Pl. 21, fig. 1.)

*Male*. Black, marked with ivory to ivory yellow as follows: clypeus, base of mandible, interantennal spot, lower orbit, scape in front, pronotal spots, two spots on tegula, spot beneath, parategula, postscutellum mostly, propodeal spots, legs partly, apical margin of tergites I to VI and sternites II to III, those of tergite I and sternite II enlarged medially



and laterally, large free lateral spot on tergite II. Red are: legs mostly (last tarsal segment dark brown), tegula mostly. Flagellum broadly reddish yellow beneath except for last three segments. Wings somewhat brownish. Pubescence short, prominent, silvery and velvety, most distinct on pleuron and abdomen. Punctuation slight on clypeus, moderate on front and mesonotum, coarse at apex of tergites II and III and sternite III. Shape of antennal apex, clypeus, parategula and genitalia as in fig. 1. Mid femur with a median tooth, mid and hind tibiae apically swollen, basal segment of mid tarsus flattened and curved. Tergite II depressed subapically, apex as thick as an ocellus diameter; apical margin of tergite III bowed out and as thick as that of II; apical margin of sternite III strongly bowed out; sternite II with median basal crease. Length to apex of second tergite, 7.0 mm.

*Female.* Mandible tip, apex of clypeus, parts of propodeum and first two tergites sometimes dull reddish (some males similarly marked); clypeus with angular pale mark across top, apex as broad as length of fourth antennal segment; orbital and mesonotal spots present; flagellum orange beneath; legs normal, vertex pit prominent, round, as broad as two ocellus diameters. Length to apex of second tergite, 8.0 mm.

Holotype, male, no. 5696, Calif. Acad. Sci. Ent., Cave Creek, Chiricahua Mts., Arizona, 5-6000 ft., August 26, 1927 (J. A. Kuseche). Paratypes, 43 males and 23 females from the following Arizona localities: Jacob Lake, Chiricahua Mts., Douglas, Benson, Roosevelt Dam, Bisbee, Phoenix, Sonoita, Continental, Nogales, Peach Spring, Dragoon, Turner, Huachuca Mts., Baboquivari Mts., Prescott, Tucson, 30 miles east of Quijotoa, Santa Catalina Mts., Pinaleno Mts., Texas Pass, Wilcox, Tombstone.

I have also seen specimens from New Mexico (Las Cruces, Organ Mts., Lordsburg), Texas (Sierra Blanca, Big Bend, Chisos Mts., El Paso, Van Horn, Marathon, Fay, Alpine), Colorado (Rocky Ford, Delta, Hoehne, Pueblo, Palisade, La Junta, Fort Collins), Utah (Provo, Salt Lake City, Showell), Wyoming (Green River), Nevada (Mt. Montgomery, Winnemucca, Charleston Mts.) and Oregon (Malheur Co.).

This species belongs to the group of *microstictus* (Viereck) all of which have the legs modified in the male. It is closest to *xanthianus* (Saussure) which also has tergites I and II thickened equally. In *xanthianus*, however the dorsum of the thorax is almost impunctate. I have previously\* identified this species as *phoenirensis* Cameron, 1908, but that author did not mention the peculiarity of the second and third tergites. His description of the female more closely fits *microstictus* Viereck, 1906, and I have seen specimens of the latter from Phoenix. Cameron states that the female clypeus of *phoenirensis* is weakly punctured and with a shallow apical in-

cision. By inference the clypeus is entirely dark. These characters all fit typical *microstictus* rather than *apache*.

**Stenodynerus (Stenodynerus) hoferi**, new species

(Pl. 21, fig. 3.)

*Male*. Black with ivory markings as follows: clypeus, V-shaped frontal spot, ocular and postocular dots, humeral spots, tegula mostly, spot beneath, parategula, legs partly, apical bands on tergites I and II and sternite II. Reddish are: tip of mandible, flagellum beneath. Reddish brown are: spot on tegula, legs partly. Wings lightly stained. Pubescence minute, somewhat pulverulent. Clypeus with moderate, sparse punctures; horizontal part of tergite I and front coarsely punctured; pronotum and mesonotum also but less closely. Shape of clypeus, parategula, antennal apex and genitalia as in fig. 3. Flagellum short and stout, first flagellar segment broader than long, first three segments and pedicel all about equal in length, hook moderate and brown; elypeal apex with a V-shaped incision; head about as long as broad in front view, interocellar area punctured but with a pair of low tubercles; vertex with a smooth tubercle adjacent to compound eye; thorax rectangular as seen from above, nearly twice as long as broad; propodeum forming a broad rough shelf behind postscutellum, hind face shiny and sparsely punctured, summit of abdominal tergite I with a distinct ridge outlined by a zone of large shallow punctures. Tergite II rather slender, apical reflex less than one ocellus diameter; sternite II with a median basal crease. Length to apex of second tergite, 5 mm.

*Female*. Clypeus with a pale, narrow, curved basal spot, deeply but sparsely punctured (fig. 3,g); vertex with a small smooth tubercle adjacent to median depression and a large one next to compound eye; median depression of vertex about as large as an ocellus; tergite II a little longer than broad in dorsal view, with a pair of small free spots (fig. 3,d); length to apex of second tergite, 5 mm.

Holotype, male, Sonoita Creek, Patagonia, Arizona (J. Bequaert), deposited in Museum of Comparative Zoology, Harvard. Paratype, female, Sabino Canyon, Santa Catalina Mts., Arizona, August 9, 1919 (G. Hofer), reared from *Canotia holocantha*, deposited in U. S. National Museum.

The small size, slender body, peculiar antennal structure, tuberculate head, and ridged first tergite place this species in a group of its own. It has small but distinct median pits on the vertical face of the pronotum and a line of pits beneath the first tergite, so it falls in the typical subgenus.

**Stenodynerus (Stenodynerus) lissolobus**, new species

(Pl. 23, fig. 8)

*Male*. Black or dark brown and ivory. Pale markings are: Clypeus, mandible mostly, scape in front, lower orbit, narrow interantennal mark,

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\**Stenodynerus fundatus* and related species in North America. 1944, Pan.Pac. Ent. 20:69-75.

postocular dot, two humeral spots, semicircle on tegula, spot beneath, parategula, scutellum mostly, legs partly, apical margin of tergites I, II, IV, V, VI, and sternite II. Flagellum brownish beneath. Wings moderately brown stained. Pubescence minute, imparting a silvery sheen, particularly on pleuron and abdomen. Punctuation moderate, becoming coarse on front, propodeum above, and summit of tergite I. Interocellar area with two greatly swollen, smooth tubercles divided by a punctured crease but bridged above front ocellus; vertex rather sparsely punctured; shape of clypeus, tip of antenna, parategula and genitalia as in fig. 8. Clypeus well punctured; humeral angle upturned and flanged; propodeum forming a pitted, nearly horizontal shelf behind postscutellum; propodeum laterally blunt, hind face roughened and feebly striate; mid femur not depressed at base beneath; tergite I with a suggestion of a carina across summit as seen in posterior view, not visible from side or above; tergite II with apical reflex about equal to one ocellus diameter; sternite II evenly convex toward base and with a moderate median carina. Length to apex of second tergite, 6.5 mm.

*Female.* Markings about as in male but deeper in color. Mandible with apical half reddish, clypeus with a basal yellow crescent (fig. 8,c), interantennal and ocular spots dotlike. Tarsi entirely brownish. Vertex depression about three times as large as an ocellus, surface dull, angled behind. Length to apex of second tergite, 7.5 mm.

Holotype, male, no. 5697, Calif. Acad. Sci. Ent., Baboquivari Mts., Arizona, August 10, 1924 (O. C. Poling). Paratypes, 5 males and 2 females, same data as type except collected July 10 to August 20; 1 male, Willow Creek Mts., New Mexico, August 28, 1933 (H. S. Gentry); 1 male, Santa Rita Mts., Arizona, July 31, 1946 (H. E. Evans). A male specimen in my collection from San Bernardo, Sonora, Mexico is small but otherwise like the type.

This species does not appear to have any close relatives. The bulging ocellar tubercles, stout parategulae and propodeal shelf are distinctive in the subgenus.

***Stenodynerus (Stenodynerus) lixovestis*, new species**

(Pl. 22, fig. 4)

*Male.* Black with yellowish-white markings as follows: clypeus except for dark rim all around (apical two-thirds black in one paratype), scape in front, frontal spot, orbital dot, postocular dot, two triangular spots on pronotum, tegula, spot beneath, parategula, postscutellum mostly, apical bands on tergites, I, II, IV, V and sternite II, free spot on tergite II, legs partly (hind femur all black, tarsi all brown). Flagellum narrowly orange brown on inside including tip. Forewing brownish, especially along forward edge. Pubescence minute, inconspicuous. Punctuation moderate, clypeus well-punctured, punctures of abdomen rather fine except toward summit of tergite I where they are nearly as large as an ocellus. Shape of clypeus, antennal tip, parategula and genitalia as in fig. 4. Interocellar area with narrow tubercles bridged over front

ocellus; propodeum rough, not forming a shelf behind postscutellum; abdominal segment II strongly convex in profile above and toward base beneath; tergite II apically thickened less than one ocellus diameter; sternite II with a deep basomedian cleft. Length to apex of second tergite, 6 mm.

*Female.* Markings about as in male. Clypeus all dark and somewhat shiny (fig. 4,g), mesonotum dotted. Vertex pit smaller than an ocellus. Length to apex of second tergite, 6.5 mm.

Holotype, male, no. 5698, Calif. Acad. Sci. Ent., 29 Palms, San Bernardino Co., California, April 14, 1938 (R. and G. Bohart). Paratypes, 24 males and 13 females from the following localities: California: 29 Palms and Palm Springs (R. and G. Bohart), near Mecca, Painted Canyon and Indio (P. H. Timberlake), Potholes (E. C. Van Duzee), Palo Verde (E. G. Linsley). Arizona: San Carlos (J. C. Bradley), Santa Catalina Mts., Patagonia and Tucson (J. Bequaert), Tucson (F. H. Snow), Buckeye (P. H. Timberlake), and Wickenburg. New Mexico: Alamogordo. Texas: El Paso (J. O. Martin).

The sharp parategulae, prominent but narrow interocellar tubercles, deep cleft of sternite II and clypeal markings in both sexes characterize the species. It appears to be related to *kennicottianus* which has similar male genitalia and a rough first tergite.

P. H. Timberlake records collecting it on *Croton* and *Eucleia*; J. Bequaert records it on *Prosopis* and *Polygonum*.

#### ***Stenodynerus (Stenodynerus) painteri*, new species**

*Male.* Black marked with ivory as follows: clypeus, mandible mostly, interantennal line, scape in front, lower orbit, postocular dot, pronotal spots, tegula mostly, spot beneath, parategula, postscutellum mostly, legs partly, apical margins of tergites I to IV and sternites II to V, that of tergite III broadly broken medially, that of sternite V restricted to a median spot, free lateral spot on tergite II. Wings brown-stained. Pubescence inconspicuous, silvery on pleuron in some lights. Punctation moderate but well-spaced on clypeus, moderate and close on front and mesonotum, becoming obsolete toward middle of propodeum, moderately coarse at summit of tergite I but not more so than toward apex, moderately coarse toward apex of tergite II. Shape of clypeus as in *sonoitensis* (fig. 9, e) but shorter and not as sharp; antennal apex about as in fig. 8, f; parategula about as in fig. 9, c but more rounded; aedeagus similar to fig. 5, a; basal extension of volsella about as in fig. 2 but more slender. Interocellar area slightly raised but without tubercles or median crease. Tergite I rather evenly convex in lateral view, tergite II broad and with basal pits rather weakly developed. Length to apex of second tergite, 7.0 mm.

Holotype, male, Garces, Arizona, August (Biedermann). Paratype, male, Santa Rita Mts., Arizona, August 4, 1932 (R. H. Painter). Holotype deposited in Museum of Comparative Zoology, Harvard.

This species resembles *rudus* but the incomplete band of tergite III, the all dark flagellum, the more coarsely punctured clypeus and less coarsely punctured first tergite easily distinguish it. The broad parategulae are characteristic also.

***Stenodynerus (Stenodynerus) patagoniensis*, new species**

(Pl. 23, fig. 7)

*Male*. Black with ivory markings as follows: mandible mostly, clypeus, scape in front, orbital and interantennal lines, postocular spot, humeral spots, tegula partly, spot beneath, parategula, legs partly, narrow apical bands of tergites I, II, IV, and VI and sternite II, free spots on tergite II. Flagellum beneath and hook dull reddish. Wings moderately brown-stained. Pubescence sparse and inconspicuous. Punctuation moderate, well spaced but deep on clypeus, coarse and close on front, moderate and close on mesonotum, moderate on tergite I, becoming irregular and coarser toward apex of tergite II. Shape of clypeus, antennal apex, parategula and details of genitalia as in fig. 7. Ocelli large, interocellar area slightly raised and shiny but not tuberculate; propodeum forming a narrow, slanting shelf behind postscutellum, sides blunt, posterior face somewhat glazed and with well-separated punctures; tergite I short and broad, sternite I with prominent, rounded-truncate projection; tergite II slightly depressed subapically, apex not as thick as an ocellus diameter. Length to apex of second tergite, 6.5 mm.

Holotype, male, no. 5699, Calif. Acad. Sci. Ent., Patagonia, Arizona, August 8, 1940 (P. H. Timberlake).

The general appearance is similar to that of *rudus*, but the oddly shaped clypeus and the prominent projection of sternite I are distinctive.

***Stenodynerus (Stenodynerus) pulvivestis*, new species**

(Pl. 22, fig. 6.)

*Male*. Black and whitish. Whitish are: mandible spot, clypeus, scape in front, large orbital and interantennal spot, postocular spot, two nearly connected humeral spots, mesonotal dot, tegula mostly, spot beneath, parategula, legs partly, apical margins of tergites I, II, IV, V, VI and sternite II, free lateral spot on tergite II. Flagellum dull red along inner side. Wings lightly brown-stained along front margin. Pubescence minute, silvery pulverulent, most noticeable on pleuron and abdomen. Punctuation moderate, distinct and fairly close on clypeus, close on front, less so on mesonotum, rather fine at summit of tergite I and toward base of tergite II, moderate and fairly close toward apex of tergite II. Shape of clypeus, tip of antenna, parategula and genitalia as in fig. 6. Interocellar area slightly raised but flat and with scattered punctures; humeral angle rather weak, propodeum without sharp angles, extended in a slanting shelf behind postscutellum, hind face well-punctured and feebly striate; no basal depression on mid femur beneath; basal pits of tergite II small and numerous, apical reflex less than one ocellus diameter; sternite II somewhat strongly curved toward base and with a sharp median crease. Length to apex of second tergite, 6.5 mm.



*Female.* Clypeus with a basal ivory crescent (fig. 6, d), tarsi all brown. Vertex depression slightly larger than an ocellus, sharply angled behind. Length to apex of second tergite, 7 mm.

Holotype, male, no. 5700, Calif. Acad. Sci. Ent., Baboquivari Mts., Arizona, August 11, 1924 (O. C. Poling). Paratypes, 34 males and 36 females from the following Arizona localities: Baboquivari Mts. (O. C. Poling); Santa Rita Mts. (F. H. Snow, R. H. Beamer); Cobabi Mts.; Patagonia (E. P. Van Duzee, J. Bequaert, P. H. Timberlake); Sahuarita (H. and M. Townes); Santa Catalina Mts. (E. P. Van Duzee, J. Bequaert, H. A. Scullen); Maricopa Mts. (H. and M. Townes); Tucson (F. X. Williams, J. Bequaert, F. H. Snow); 14 miles east of Oracle (E. P. Van Duzee); Tumacacori (J. Bequaert); 17 miles east of Coolidge Dam (H. A. Scullen); Roosevelt Lake (H. and M. Townes). Globe (D. K. Duncan); near Douglas (P. T. Timberlake); 30 miles east of Quijotoa; Lowell Ranger Station, Pima Co. I have also seen a female specimen from Los Mochis, Sinaloa, Mexico (C. T. Dobbs).

This species is related to *S. australis* (Robt.) from Florida, having the male aedeagus of a similar shape. *Australis* lacks the teeth of the median expansion, however, and has tergite I mostly red as well as other color differences.

#### **Stenodynerus (Stenodynerus) rudus, new species**

*Male.* Black with ivory markings as follows: clypeus, scape and pedicel in front, mandible mostly, triangular interantennal mark, lower orbit, postocular dot, humeral spots, tegula mostly, spot beneath, parategula, mesonotal dot, postscutellum mostly, legs partly, apical bands on tergites I to VI and sternites II and III, that on tergite I wavy, free spots on tergite II. Pale reddish are: tarsi partly, flagellum broadly beneath and all of last two segments. Wings partly reddish-brown stained. Pubescence inconspicuous, pale fulvous. Punctuation rather fine on clypeus, moderate but close on front, moderate on mesonotum, very coarse and becoming pit-like on summit of tergite I, moderate but well-spaced toward apex of tergite II and on sternite III. Antennal tip about as in fig. 4, f, clypeus and parategula about as in figs. 2, c and 2, e, genitalia similar to figs. 4, a and 4, b, but with a more distinct median projection on basal extension of volsella. Head broader than long, interocellar area somewhat raised with barely indicated lateral tubercles; hind face of propodeum glazed, minutely striate, moderately punctured; first abdominal segment broad, sternite II rather sharply cleft toward base at middle; tergite II with apical thickness less than one ocellus diameter. Length to apex of second tergite, 5.0 mm.

*Female.* Pale markings deeper in tone than in male; clypeus usually all black except for a dot at the basal middle, finely punctured, somewhat striate toward apex; dot on mandible base; orbit with a dot; a spot on propodeal angle; sternite III dark; tarsi reddish brown. Vertex

pit poorly indicated but fairly broad and well punctured. Length to apex of second tergite, 7.0 mm.

Holotype, male, Sonoita Creek, Patagonia, Arizona, on *Baccharis* (J. C. Bequaert). Paratypes, 16 males and 8 females from; Patagonia, Arizona (J. Bequaert); San Carlos, Arizona (J. C. Bradley); Hassayampa, Maricopa Co., Arizona (J. C. Bradley); Mesilla, New Mexico, (T. D. A. Cockerell); Las Cruces, New Mexico (T. D. A. Cockerell); Eagle Pass, Texas (Jones and Pratt). Holotype in the Museum of Comparative Zoology, Harvard.

In addition to the type series I have seen material from Yuma and Buckeye, Arizona; Needles and Blythe, California; Grand Coulee and Lind, Washington; and Green River, Wyoming. Most of these specimens have the band on tergite III incomplete and the markings more yellowish.

The species is closely related to *kennicottianus* (Saussure) and the more obvious differences lie in the shallower clypeal incision, prominent light reddish flagellum beneath and at tip, and in the median projection of the volsellar extension in *rudus*.

***Stenodynerus (Stenodynerus) sonoitensis*, new species**

(Pl. 23, fig. 9)

*Male*. Black marked with ivory yellow as follows: clypeus except for a lateral black spot, mandible mostly, interantennal dot, scape in front, orbital dot, postocular dot, pronotal spots, tegula mostly, spot beneath, parategula (black-edged), postscutellum mostly, legs partly (hind femur entirely dark), apical margins of tergites, I, II, IV, V, VI and sternites II to IV, those of third and fourth sternites and fourth to sixth tergites obsolete laterally. Flagellum narrowly light brown beneath including all of last segment. Wings brown-stained. Pubescence minute, inconspicuous. Punctuation moderate on clypeus, moderate and close on front and mesonotum, coarse but mostly well-spaced at apex of tergite II and sternites II and III, that of hind face of propodeum sparse toward center which is finely striate. Shape of clypeus, antennal apex, parategula and genitalia as in fig. 9. Interocellar area with low tubercles not connected in front. Tergite I distinctly narrower than II, angular in lateral view, summit with a fairly well defined carina; tergite II about as long as broad, apical thickness less than an ocellus diameter; sternite II with a weak median basal crease. Length to apex of second tergite, 5.5 mm.

*Female*. Markings a little more yellow, clypeus with basal curved spot, tarsi all brown, sternite IV dark, sternite III with or without a median apical spot. Vertex pit distinct, as broad as distance between hind ocelli. Length to apex of second tergite, 6.5 mm.

Holotype, male, Sonoita Creek, Patagonia, Arizona (J. C. Bequaert). Paratypes, 4 females, same data as type. Holotype in the Museum of Comparative Zoology, Harvard.



The combination of broad parategulae, a carina across the summit of tergite I and the unspotted second tergite distinguish this species from others of the subgenus.

***Stenodynerus (Stenodynerus) superpendentis*, new species**

(Pl. 21, fig. 2)

*Male*. Black and whitish, legs partly orange red. Whitish markings are: mandible mostly, clypeus, scape in front, interantennal triangle, ocular emargination, postocular dot, two humeral spots, two spots on tegula, spot beneath, parategula, mesonotal dot, band across postscutellum, legs partly, apical margins of abdominal tergites I, II, III, IV and sternites II and III, that on tergite I with attached lateral spot. Tergite II with free spots, III with lateral spots. Red are: mandible tip, tegula mostly, legs partly (tibiae and tarsi red and white). Inner margin of flagellum dull yellow except at apex. Forewing slightly dusky. Pubescence pale and rather inconspicuous except on pleuron. Punctuation moderate, fine on clypeus, close on front, less so on mesonotum, not enlarged at summit of tergite I, coarse along apical margin of tergite II. Shape of clypeus, tip of antenna, parategulae and genitalia as in fig. 2. Last antennal segment large, stout, obliquely truncate; antennal segments VI to X with pale pubescence beneath. Interoccellar tubercles present and projecting eyelid-like over each of the ocelli; humeral angles moderate, margin carinate; propodeum without a shelf behind postscutellum, lateral angles forming a dull ridge, hind face punctured and feebly striate; mid femur weakly depressed beneath toward base; tergite II reflexed at apex about two and one-half ocellus diameters; sternite II evenly but rather strongly curved toward base and with a sharp median carina. Length to apex of second tergite, 6.0 mm.

*Female*. Markings about as in male. Clypeus with a central rectangular black mark attached at lower corners to an apical black margin (fig. 2, d). Propodeal angles with a long spot. Tarsi all red. Vertex depression about as large as two ocelli, angled behind. Length to apex of second tergite, 6.5 mm.

Holotype, male, no. 5701, Calif. Acad. Sci. Ent., 10 miles west of Jacob Lake, Arizona, June 6, 1946 (R. M. Bohart). Paratypes, 10 males and 9 females from the following localities: Clark Mt., Nevada (4500-6500 ft.) (P. H. Timberlake); Mt. Montgomery, Nevada (7000 ft.) (R. Bohart); Huachuca Mts., Arizona (F. X. Williams); Oak Creek Canyon, Ariz. (G. Bohart); Baboquivari Mts., Ariz. (O. C. Poling); Nogales, Ariz. (J. C. Bradley); Patagonia, Ariz. (P. H. Timberlake); North Rim Grand Canyon, Ariz. (R. Bohart); Murtagh, Idaho (Hinnenkamp); Chisos Mts., Brewster Co., Texas (Mitchell and Cushman).

This species is related to *S. cochisensis* (Vier.) which has similar male genitalia. However, the combination of lidded ocelli, peculiar male antennae, narrow parategulae and whitish and red markings is distinctive.

**Stenodynerus (Stenodynerus) williamsi**, new species

(Pl. 22, fig. 5)

*Male.* Black and deep ivory, legs ivory and brown. Ivory are: mandible mostly, clypeus, scape in front, orbital and interantennal lines, postocular line, two humeral spots, tegula mostly, spot beneath, parategula, postscutellum mostly, apical margins of tergites I, II, IV, V, VI and sternites II and III, free lateral spot on tergite II, legs partly. Flagellum narrowly dull reddish beneath, antennal hook dark. Wings somewhat brown stained, especially along front margin. Pubescence minute, inconspicuous. Punctuation moderate, close on front and mesonotum, fairly coarse on mesonotum above and toward summit of tergite I where it subtends an irregular but definite ridge. Shape of clypeus, antennal apex, parategula and genitalia as in fig. 5. Interocellar area punctured, tubercles barely indicated; propodeum forming a very weak slanting shelf behind postscutellum, lateral angle blunt, hind face somewhat glazed with feeble striae and well-separated punctures; first two abdominal segments relatively broad, postsutural area of tergite I more than twice as broad as long, sternite II flattened toward base and with a slight median crease, tergite II with apical reflex about equal to one ocellus diameter; length to apex of second tergite, 5.5 mm.

*Female.* Clypeus with a pale basal crescent (fig. 5, e); mandible with a basal spot, mesonotum with a dot; tergite VI and sternite III dark; vertex depression a little larger than an ocellus; length to apex of second tergite, 6.0 mm.

Holotype, male, Sabino Canyon, Santa Catalina Mts., Arizona (J. Bequaert), deposited in Museum of Comparative Zoology, Harvard. Paratypes, 1 male and 5 females from the following localities: Arizona: Tucson (F. X. Williams), 14 miles east of Oracle (E. P. Van Duzee, J. O. Martin), Santa Catalina Mts. (E. P. Van Duzee), Dragoon. New Mexico: Organ Mts. (Townsend).

The combination of the nearly flat interocellar area, unbanded tergite III, spotted tergite II, slender parategulae, and a definite ridge across the summit of tergite I distinguishes *williamsi* from other species in the subgenus.

**Stenodynerus (Parancistrocerus) bicornis cushmani**, new subspecies

Black and ivory yellow, legs partly red. Ivory yellow are: clypeus (basal third only in female), mandible partly, scape in front, interantennal mark, orbital mark, postocular spot, two humeral spots, spots on tegula, spot beneath, parategula, mesonotal dot, band across postscutellum, propodeal angles in female, legs partly, apical margins of tergites I, II, IV, V and sternites II and III, free lateral spot on tergite I and sometimes on II, free lateral spot usually on sternite II. Brownish red are: mandible partly, flagellum beneath, tegula mostly, legs partly (including all of hind femur). Wings lightly stained with brownish, especially in apical cell. Vertex depression of female rather indistinct, about as large as an ocellus diameter. Second tergite reflexed four to five

ocellus lengths. Length to apex of second tergite, male 8.5 mm., female 8.5 mm.

Holotype, male, Chisos Mts., Brewster Co., Texas, June 10-12, 1908 (Mitchell and Cushman), returned to U. S. National Museum. Paratypes, 12 males and 8 females from the following localities: Texas: Davis and Chisos Mts. (E. C. Van Dyke), Alpine (F. C. Bishopp, H. A. Scullen), Cisco (G. O. Wiley), Devils River (F. C. Pratt), and Uvalde (J. C. Bradley). New Mexico: Organ Mts. (Townsend) and Jemez Springs (J. W. Woodgate). Arizona: Huachuca Mts. (L. C. Kuitert), 23 miles northeast of Tucson (H. A. Scullen), Prescott (R. H. Painter), Baboquivari Mts. (O. C. Poling) and Tucson (F. H. Snow), Paratypes collected from April to September.

The species has prominent interocellar tubercles, outstanding silvery hairs as long as two ocellus diameters on tergite I, a coarsely punctured and sunken subapical zone on tergite II with a thinly reflexed edge, the margin of tergite II slightly incurved as seen from above, and broad parategulae. The typical subspecies from Florida has the markings of abdomen and thorax orange to reddish instead of ivory yellow.

***Stenodynerus (Parancistrocerus) chiricahuae*, new species**

*Male.* Black and deep ivory yellow, legs partly reddish. Yellow are: mandible mostly, clypeus, interantennal spot, ocular and postocular dots, humeral margin, posterior margin of pronotum narrowly, tegula partly, spot beneath, parategula, band across postscutellum, legs partly, apical margins of tergites I, II and sternite II broadly, of tergites IV to VII and sternites III, IV narrowly. Inner margin of flagellum broadly orange yellow nearly to apex. Wings brown stained especially along front margins. Pubescence fulvous, inconspicuous. Punctuation moderate to coarse; clypeus well-punctured, punctures of front coarse and close, more so on mesonotum, coarse on tergites I and II, especially coarse toward apical margin of tergite II. Shape of clypeus as in fig. 1, e, but more deeply incised at apex; antennal apex slender, last segment not reaching base of segment X; parategula slender, blunt, incurved along posterior edge; aedeagus expanded toward base, spade-like toward apex, basal extension of volsella with a smoothly rounded subbasal projection. Interocellar area punctured, not raised, humeral angles moderate; propodeum not shelf-like below postscutellum, lateral angle in a long low ridge, hind face roughened but feebly striate; mid femur not depressed toward base beneath, tergite I somewhat depressed above, much narrower than II which is reflexed about one ocellus diameter; sternite II bent near base and without a median crease. Length to apex of second tergite, 7.0 mm.

*Female.* Clypeus with a basal yellow crescent, flagellum all dark, propodeum sometimes yellow spotted, tarsi all reddish brown. Vertex

depression about equal in size to an ocellus. Length to apex of second tergite, 8.0 mm.

Holotype, male, No. 5702, Calif. Acad. Sci. Ent., Onion Flat, Chiricahua Mts., Arizona, August 12, 1940 (E. S. Ross). Paratypes, 6 males and 11 females from the following Arizona localities: Chiricahua Mts. (E. S. Ross, R. I. Sailer, J. A. Kusche), Huachuca Mts. (E. P. Van Duzee, F. X. Williams, W. H. Mann, R. H. Beamer), Santa Rita Mts. (F. H. Snow, R. Bohart, J. Bequaert), Santa Catalina Mts., Oak Creek Canyon (R. H. Beamer), Baboquivari Mts. (O. C. Poling). I have also seen a female from Atzacapozalco, Mexico.

This species belongs to the *S. perennis* (Sauss.) group which is characterized by the abdominal shape. It differs from its relatives by a combination of characters: fine punctation on summit of tergite I, hind margin of pronotum yellow, tergites IV to V or VI marked, extension of male volsella with smooth and protruding subbasal lobe.

**Stenodynerus (Parancistrocerus) coronado, new species**

*Male.* Black marked with ivory yellow as follows: clypeus except free margin and apical squarish dot, mandible partly, scape in front, V-shaped frontal spot, lower orbital spot, postocular dot, narrowly separated humeral spots, tegula partly, spot beneath, parategula, band across post-scutellum, legs partly, apical margins of tergites I to VI and sternites II and III, that on tergite II broad, large spots on tergite I extending obliquely along summit and almost joining, free spots on tergite II. Reddish are: mandible apex, tegula mostly, legs partly including all of tarsi. Wings reddish-brown stained. Pubescence fulvous, rather inconspicuous, fairly long and erect on front, propodeal angle, summit of tergite I and aciculate area of tergite II. Punctation distinct on clypeus, coarse and close on front, mesonotum and tergites I and II, becoming very coarse and aciculate toward apex of II, sternite II with an impunctate basal V-shaped area around median longitudinal crease, sternite III with pit-like punctures subapically. Shape of clypeus about as in fig. 8, e, but more regular at base; antennal apex about as in fig. 5, e; parategula about as in fig. 7, c; aedeagus with median expansion as in fig. 5, b, but more pronounced and rounded; basal extension of volsella with a cockscorn-like subbasal crest. Interocellar tubercles prominent, smooth, not bridged over front ocellus; ocular swellings present, hind face of propodeum granulate, indistinctly striate; apical margins of tergites I and II strongly convex as seen from above, that of II obtusely drawn out into a flange about equal to five ocellus diameters. Length to apex of second tergite, 8.0 mm.

*Female.* Clypeus with a crescentic basal yellow spot; orbital, mesonotal and propodeal dots present. Vertex depression rather broad, shallow and granular. Length to apex of second tergite, 9.0 mm.

Holotype, male, No. 5703, Calif. Acad. Sci. Ent., Whitehouse Canyon, Santa Rita Mts. Arizona, May 31, 1946 (R. M. Bo-

hart). Paratypes, 14 males and 9 females as follows: Arizona: Santa Rita Mts. (F. H. Snow, R. Bohart), Chiricahua Mts. (L. Kuitert), Greenlee Co. (D. K. Duncan), Palmerlee (N. Banks), Jacob Lake (R. Bohart), Oak Creek Canyon (F. H. Snow); Pinaleno Mts.; New Mexico: Sapello Canyon (C. F. Baker collection); Utah: Beaver Canyon (R. Bohart); Colorado: Boulder; Texas: Chisos Mts.

The obtusely projecting flange and coarse punctation of the second tergite are diagnostic. In general, however, the species resembles *colon* (Cresson) which occurs with it in some localities, but has not been reported in Arizona south of Oak Creek Canyon. According to specimens in the Snow Museum at the University of Kansas, H. L. Viereck misidentified this species as *toltecus* (Saussure).

***Stenodynerus (Parancistrocerus) minimoferus*, new species**

*Male*. Black and ivory-white, legs marked with red. Ivory-white are: clypeus except for narrow black margin, mandible spot, large orbital and interantennal spots, postocular spot, two nearly connected humeral spots, two spots on tegula, spot beneath, parategula, mesonotal dot, post-seutellum mostly, lower propodeal angles, legs partly, wavy apical bands on tergites I, II, IV and sternite II, median apical spot on tergite III. Red are: mandible apex, large spot on tegula, legs partly (including all of mid and hind tarsi, hind femur). Flagellum dull orange beneath. Wings lightly stained. Pubescence minute, silvery pulverulent. Punctation coarse at middle of clypeus, on propodeum above, at summit of tergite I, toward middle of tergite III, and apex of sternite II, sternite III coarsely pitted; punctures moderate and close on front and mesonotum. Shape of clypeus about as in fig. 8, e; parategula about as in fig. 6, c, but slightly incurved along posterior edge; antennal tip about as in fig. 9, d; aedeagus with median and submedian expansions of similar breadth, as in *coronado*; basal extension of volsella with a protruding serrately-edged crest. Interocellar area with a pair of prominent narrow tubercles which form a low bridge over front ocellus. Humeral angle moderate, slightly flanged. Propodeum blunt laterally, forming a weak slanting shelf below postseutellum, hind face dull, punctured, feebly striate. Tergite I almost as broad as II, acarinarium with a median opening (rather than opening equally across entire body), tergites II and III with perpendicularly reflexed margins about equal to one and one-half ocellus diameters, sternite II stout, creased, reflexed about one ocellus diameter, sternite III with somewhat thickened edge which protrudes convexly at middle. Length to apex of second tergite, 5.5 mm.

*Female*. Clypeus with basal ivory crescent, ivory ocular dots present, interocellar tubercles lower than in male. Vertex depression broadly angled behind, extending almost as far laterally as ocelli. All tarsi red. Length to apex of second tergite, 7.0 mm.

Holotype, male, Davis, California, July 26, 1936. Paratypes, 31 males and 20 females from the following localities: Davis



(R. Bohart, J. DuBois, E. Schlinger) and Independence (L. Muchmore), California; Gerlach, Nevada (M. Cazier); Green River, Wyoming; Salt Lake City (O. H. Swezey) and Timple (G. Knowlton), Utah; Blitzen Valley, Oregon (S. Jewett); Grand Canyon South Rim (E. Bell and F. Lutz), Santa Catalina Mts. (R. Bohart) and Tempe, Arizona; Liberty Hill, Eastland Co. (G. Wiley), Williamson Co. (R. Strandtmann), Burleson Co. (J. Silvey), Kerrville (F. C. Pratt) and Austin, Texas. Several Davis paratypes were bred from old *Sceliphron* mud nests.

This species is the only one of the subgenus with the second and third tergites thickened equally. In this respect it resembles *apache* in the subgenus *Stenodynerus*. In addition to the mite chamber, *minimoferus* has well defined interocellar tubercles and these with the color differences readily distinguish it from *apache*.

***Stenodynerus (Parancistrocerus) polingi*, new species**

*Male*. Black or dark brown with ivory yellow as follows: clypeus, mandible mostly, scape in front, interantennal mark slightly widened above, line along lower orbit, postocular spot, two narrowly separated humeral spots, two spots on tegula, spot beneath, parategula, band across postscutellum, legs partly (including most of tibiae), apical margins of tergites I to VI and sternites II to III, free lateral spot on tergite I. Flagellum dull reddish to brownish beneath. Wings brown stained, especially in apical cell. Pubescence minute, pale, inconspicuous. Punctuation fine on clypeus, coarse and moderately close on front and mesonotum, coarse on propodeal angles, on tergites I and II (especially so in yellow band of II) and toward apices of sternites II and III. Shape of clypeus about as in fig. 8, e, but longer; antennal tip about as in fig. 9, d; parategula about as in fig. 9, e; aedeagus with small submedian expansion, the median (more apical) expansion broad and angular; basal extension of volsella with a cockscomb-like subbasal crest. Interocellar area with a pair of large smooth swellings connected by a low bridge above front ocellus; shiny areas present on vertex near compound eyes. Humeral angle somewhat upturned. Propodeum with a large shiny space above at base, a rough shelf present below postscutellum, lateral angle blunt, hind face irregularly punctured, hardly striate. Tergite I with an irregular but complete ridge across summit; tergite II about as broad as I, depressed subapically, reflexed apically about one and one-half ocellus diameters; sternite II broad, evenly convex and creased at basal middle. Length to apex of second tergite, 8.0 mm.

*Female*. Large pale spot across base of clypeus, ocular dots and mesonotal dot present, spot on propodeal angle, oblique spot on tergite I attached to apical band, tarsi brownish. Vertex depression oval, rather indistinct, about twice as broad as an ocellus. Length to apex of second tergite, 8.5 mm.

Holotype, male, Baboquivari Mts., Arizona, July 10, 1924 (O. C. Poling). Paratypes, 25 males and 7 females from the following localities: Baboquivari Mts., Arizona (O. C. Poling); Huachuca Mts., Arizona (E. G. Linsley, F. X. Williams); Santa Catalina Mts., Arizona (E. P. Van Duzee). Willow Creek Mts., New Mexico (H. S. Gentry). Paratypes were collected from June to October.

Structurally, *polingi* is close to *fulvipes* Saussure which is the type species of the subgenus. However, *polingi* has paler markings and somewhat more bulging interocellar tubercles. Also, the male genitalia differ in details, the aedeagus of *polingi* having a narrower submedian expansion.

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Locality records for previously described *Stenodynerus* occurring in southern Arizona are given below.

*Stenodynerus* (*Stenodynerus*) *ochrogonius* R. Bohart. ARIZONA: Baboquivari Mts. (type locality), Huachuca Mts., Chiricahua Mts., Santa Catalina Mts., Santa Rita Mts., Patagonia, Nogales, Oracle, Oak Creek Canyon. NEW MEXICO: Willow Creek Mts.

*Stenodynerus* (*Stenodynerus*) *foxensis* R. Bohart. ARIZONA: Baboquivari Mts. (type locality), Patagonia, 14 miles east of Oracle, Lowell Ranger Station (Pima Co.), Nogales, Tucson. NEW MEXICO: Willow Creek Mts.

*Stenodynerus* (*Stenodynerus*) *taos* (Cresson). ARIZONA: Huachuca Mts., Douglas, Phoenix, Grand Canyon, 25 miles east of Sonoita, Turner. NEW MEXICO: Taos (type locality), Las Cruces, Mescalera, Santa Fe, Albuquerque, Pyramid Peak (Dona Ana Co.), Jemez Mts. COLORADO: Boulder, Cone, Sugar City, Pleasant Valley, Paonia, Colorado Springs, La Junta, Boulder, Golden, Fort Collins, Eads, Cedaredge, Cheyenne Wells, Hoehne, Valmont, Burlington, Pueblo, Fort Collins. TEXAS: Davis Mts., Alpine, Van Horn, El Paso, Marathon, New Braunfels, Marfo, Del Rio, Devils River, Knippa, Fedor, Brownsville, Austin. SOUTH DAKOTA: Buffalo Gap. KANSAS: Cheyenne. WYOMING: Grand Teton National Park. CALIFORNIA: Descanso. MEXICO: Monclova.

*Stenodynerus* (*Stenodynerus*) *microstictus* (Viereck). ARIZONA: Santa Catalina Mts., Tucson, Phoenix, Bill Williams Fork, Yuma. CALIFORNIA: San Bernardino Co., Imperial Co., Riverside Co., Monterey Co., Alameda Co. NEVADA: Nixon, Beatty, Indian Springs, Charleston Mts. NEW MEXICO: Las Cruces, Mesilla, Santa Fe, Springer. COLORADO: Jefferson Co., Boulder, Pueblo, Fort Collins, Longmont, Chivington. WYOMING: Green River. KANSAS: Clark Co. (type locality), Baldwin, Mead Co. TEXAS: El Paso, San Antonio, Rio Grande, Devils River, Brownsville, Cypress Mills, Knippa, Del Rio, Corpus Christi, Cresson, Eagle Pass, Liberty Hill, Alpine, Paris. SOUTH



DAKOTA: Volga. MEXICO: Tlahualilo, Guaymas. LOWER CALIFORNIA: San Domingo, near Mesquital.

*Stenodynerus (Stenodynerus) papagorum* (Viereck). ARIZONA: Santa Rita Mts., Baboquivari Mts., Huachuca Mts., Santa Catalina Mts., Pinaleno Mts., Oak Creek Canyon (type locality), Douglas, Flagstaff, Grand Canyon, Jacob Lake. NEW MEXICO: Lordsburg, Santa Fe, Mescalero, Jemez Mts., Las Vegas. TEXAS: Brewster Co., Fort Davis, Chisos Mts. COLORADO: Florissant, Boulder, Denver, Ouray, Glenwood Springs, Meeker, Durango, Chimney Gulch, McCoy, Mesa, Trinidad, Livermore, Steamboat Springs. MEXICO: Atzacapalzaleo.

*Stenodynerus (Stenodynerus) pereampanulatus* (Viereck). ARIZONA: near Kayenta, Douglas. NEW MEXICO: Las Cruces, Albuquerque. TEXAS: El Paso, Davis Mts., Marfa. KANSAS: Hamilton Co. (type locality). IDAHO: Tuttle. WASHINGTON: Gardenia. "W. T.": Ainsworth.

*Stenodynerus (Stenodynerus) vanduzeei* R. Bohart. ARIZONA: Pinaleno Mts., Atascosa Mts., near Oracle, Baboquivari Mts. (type locality). NEW MEXICO: Organ Mts., Fillmore Canyon, Willow Creek Mts., Dripping Springs. TEXAS: Davis Mts., Chisos Mts. LOWER CALIFORNIA: Sierra Laguna.

*Stenodynerus (Stenodynerus) valliceps* R. Bohart. ARIZONA: Tempe, Douglas. Also from Western Texas, New Mexico, Colorado, Kansas, North Dakota, Minnesota (Traverse Co.), Wyoming (type locality Green River), Utah, Idaho, Washington, Oregon, California, Lower California, Mexico (Sinaloa).

*Stenodynerus (Stenodynerus) cochisensis* (Viereck). ARIZONA: "S. Arizona," Oak Creek Canyon (type locality), Grand Canyon. Also from Utah, Colorado, Nevada, California, Oregon and Washington.

*Stenodynerus (Parancistrocerus) lacunus* (Fox). ARIZONA: Baboquivari Mts., Santa Catalina Mts., San Xavier, Wickenburg, Yuma, Nogales, Pima Co., Congress Junction, Patagonia, Tucson, Owlhead. NEW MEXICO: Las Cruces, Albuquerque. TEXAS: Brewster Co., Brownsville, Austin, Eagle Pass, Sabinal, Knippa, Cypress Mills, Caldwell Co. LOWER CALIFORNIA: Tiburon Island, Concepcion Bay, San Jose del Cabo (type locality). CALIFORNIA: Borrego, Riverside Co., Needles, Imperial Co.

*Stenodynerus (Parancistrocerus) toltecus* (Saussure). ARIZONA: Tucson, Oracle, Hot Springs, Oak Creek Canyon, Santa Catalina Mts., Santa Rita Mts., Grand Canyon, Baboquivari Mts., Superior, Patagonia, Congress, Bradshaw Mts., Nogales, Quijotoa, Texas Pass, Phoenix. Also from New Mexico, western Texas, Utah, Idaho, Washington, Oregon, California, Lower California, and Mexico (type locality, Mextitlan).

*Stenodynerus (Parancistrocerus) rectangularis* (Viereck). ARIZONA: Oak Creek Canyon (type locality), Huachuca Mts., Santa Rita Mts., Chiricahua Mts., Pinaleno Mts., Roosevelt Dam. NEW MEXICO: Des Moines, Jemez Springs.